Government Reform in Japan

- An Application of SD National Model based on SNA –

Saburo KAMEYAMA, Department of Commerce, Chuo University
742 Higashinakano, Hachioji, Tokyo, JAPAN 192-0393
TEL: +81-426-74-3626/FAX:+81-426-74-3651
E-mail:crescent@tamacc.chuo-u.ac.jp
Hidenori KOBAYSHI, Chuo University
TEL:+81-426-74-4136/
E-mail:Kobaken0@fsp.chuo-u.ac.jp
Toru SUETAKE, Arthur Andersen Tokyo
E-mail:Tohru.suetake@jp.arthurandersen.com

1. ABSTRACT

Central government and local government of Japan are faced with many difficulties with in limited budget that comes mainly from recent economic recession. They still try to manage many issues by project based approach. Accordingly current national and municipal problems of Japan such as environment protection, solid waste problem, local industrial redevelopment, local unemployment and so on, are approached as individual specific projects. However, these project-based approaches are criticized sometimes as difficult to manage the integrated effects of government actions on national and local economy. We built the SD national model of Japan based on 1993 revised SNA (They System of National Accounts) that composed of consistent and integrated set of macroeconomic accounts. Each account represents institutional sector of national economy. Institutional sector has its sub-sectors. So we devised the nested account structure as our model structure. Based on this national model, we show the relation and impact of government reform to national and local economy.

2. History of SD model for planning development assistance of local government in Japan

During 1970s to 80s, almost all major Japanese local governments built many SD models for their planning development assistance including Kanagawa Prefecture Model in 1978 and Hyogo Prefecture Model in 1996. In Kanagawa Prefecture model, as example, they simulate the future of the Kanagawa prefecture in the 21st century for planning and provide basis of discussion (1). Their simulation results did not show bright future same as other results of the simulation:

1) Expand double of old aged population in the 21st century
2) Increase nitro-oxide (NO_x) and other pollution rapidly to be double of present state
3) Decrease the green percentage of urban area to drop half of present state
4) Become secure to keep water resources and only 70% of the demand could fulfil
5) Industrial structure change rapidly shift to leaded by the service sector

In those days, many Japanese local governments try to set the improvement targets and formulate their plan to achieve better life to catch up with the western countries including East Europe and USA. Also the boom of computerization help to implementation of SD model and information system for planning. Even when the calculation results shows pessimistic future, SD model gives very useful information for setting targets and strategies for local government planning staffs.

However, neither these SD models are used for planning development in Japan anymore, nor develop new SD model for planning. There could be several reasons to make in such situation:

1) Information Technology rapidly progressed and SD model and simulation technology could not catch up suitable in Japan.
   - Old SD model was written by DYNAMO and FORTRAN but computer language itself rapidly

shift to new language such as Visual C++ or Visual Basic. Suitable conversion software program from DYNAMO to Visual C++ or Visual Basic does not developed in Japan. Limited use of Japanese characters and Kanji are also make barrier to SD model.

- Also, old SD model work on mainframe computer operation system but information technology stream change mainframe system to server and network system.

This rapid technology progress makes very difficult to keep maintenance of the SD model for available condition in every stage of information technology evolution. Sometimes budget constraints need to cut the improvement or modification program of SD model because these models could use only few times during long term planning and budgeting period of their work. This makes impossible to change these models for working on present Windows and LAN system. As the results, they render the model and the system sleep peacefully in some warehouses under cover of thick dust.

2) SD models are developed as full set model that tries to cover every possible issues and areas. But this made heavy and big system for not easy to change or adapted to specific topics easily.

- SD model itself is developed for many purposes including get future perspective and show the basis of planning or settled targets.

This multi purpose model itself is quite useful at first stage so far as during staffs still know the system well. However, rotation and experts retirement makes difficult for change the model or improve the model for adapting new issues and environments. Furthermore, big and complicated model itself makes difficult to be understood during through rapid technology evolution and government staff feel like read hieroglyph of ancient Egypt.

Also, rapidly change of environment especially during economic booming during ‘80s makes people feel they can go without having long term plan or grand strategy. Tax income keep increasing and planning staff stop to worry about would-happened troubles in the future. But most important problem is lack of global strategy or lack of considering long term perspective. As the result, local government staff has no choice but executing project on the plan. Lack of suitable simulation tools also makes trouble to have effective communication with central government. Also, central government enforces the control power for planning and local government was set as one of executive agencies. This makes reduce the local government staff’s motivation for grand strategy or long term plan and make reduce the eager attitudes for SD model as assistance to develop the long-term plan by themselves. They feel like “Leave it alone and everything going fine. The central government takes care about complicated matter. So why worried about tomorrow that not yet happen?” As the result, nobody does try to use SD model with overcomes the hard hieroglyph reading efforts.

3) Based statistical data for future perspective is not sufficient and they do not have stable stands.

Even Japan has very good statistics data, but statistic data is sometimes not keep consistent and

simulation results are different for stand on different data. Also, the different structure of the statistics data itself makes problems such as impossible to adapt the result of other simulation results. Sometimes local government develops the national economic model even though other local government already developed but for simply could not have merged with their model.

3. SD model for local government

Even though the Japanese local government do not use SD model for their planing development anymore, the needs are still exists especially now that the local governments start to facing up rapid change of their environment.

The implementation of the new local government law required to executing more jobs and decision making for local government but financial assistance from the central government could be cut rapidly. Also project-based approach is criticized especially by the effectiveness of relation. The relation is complicated and need powerful tool to show the connection and result clearly. It means, local government must enforce the planning ability to keep improving life standards of local people. This planning abilities including both income side, that composed with taxation and industrial development, and expenditure side, that composed with many projects.

As considering of lessons learned from the past history, we decide to build the SD model for local government as following development policies:

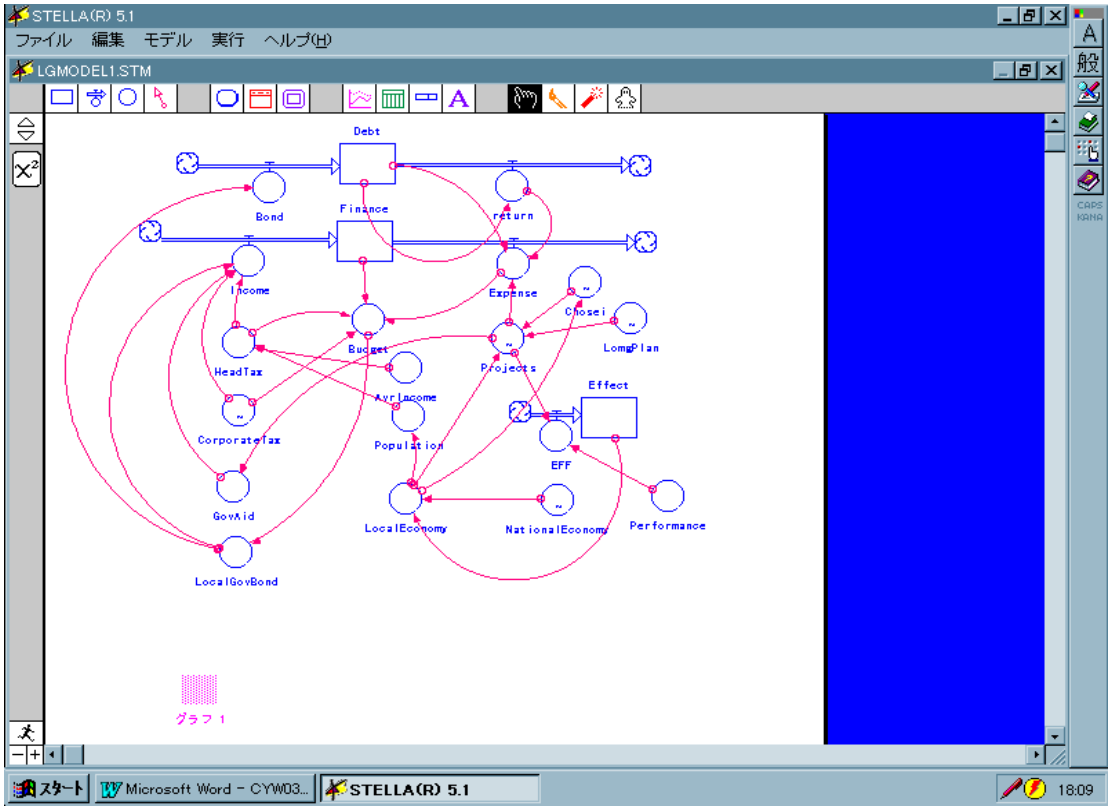
1) Use modern industry standard technology to develop the model
   It is simply possible for use industry standards SD software for SD modeling. As past, we sometimes use BASIC and other computer language but could not recommended to use these computer languages.
2) Use small model specific for target issues
   We do not recommend developing full set SD model. Just simply narrow the target and develop the specific model for specific topics. This could help to make small model and easy to understand or easy to improve the model.
3) Accept change the model structure
   Previous model structure is rather solid and static even system dynamics handles dynamics itself. We recommend to accept that change the structure of the SD model itself has meaning for simulation. We hope, in future, SD system program language adapt evolving structure of model itself automatically.
4) Use SNA statistics data system as basis.
   Even when model is different, we can discuss the topics with use of same basis. SNA has been taken in such internationally standardized and structurally systemic way. It has nested structure and keeps consistency at any place and at any data. This structure is very attractive for SD model builder for he/she can use any level of data from national level to local government level.

The SD model for local government is shown as fig.1. This model composed with mainly two parts,

income side and expenditure side. In income side, presently financial assistance from central government shares large portion. (That mainly comes from three central government ministries. The Ministry of Agriculture, Forestry and Fishery assist implementation of agriculture business development. The Ministry of Trade and Industry assist implementation of small and medium industry and commerce development. Biggest portion of the financial assistance comes from the Ministry of Construction for help to public construction such as road maintenance, bridge, library and public halls. Also aids comes from the Ministry of finance directly sometimes.) Average of financial aids from the central government comes up around 50% of the local government budget (2).

Tax incomes composed with mainly two parts: personal income tax (headcount tax) and corporate tax. (Sometimes, special tax is set for specific purpose such as urban development.) Rural area faced up the decrease of population that related with the personal income tax. Also recent economic recession makes many bankruptcy of small and medium company in local area that connect with the corporation tax income. Depopulation connected local economy deeply and they need to develop the local industry for keep hired the local people. If local industry grew and hire more local people, they can stop depopulation and keep living standards as well as improve the living infrastructure such as road and public facilities. However, the problem is, industrial development deeply connect with the national economy.

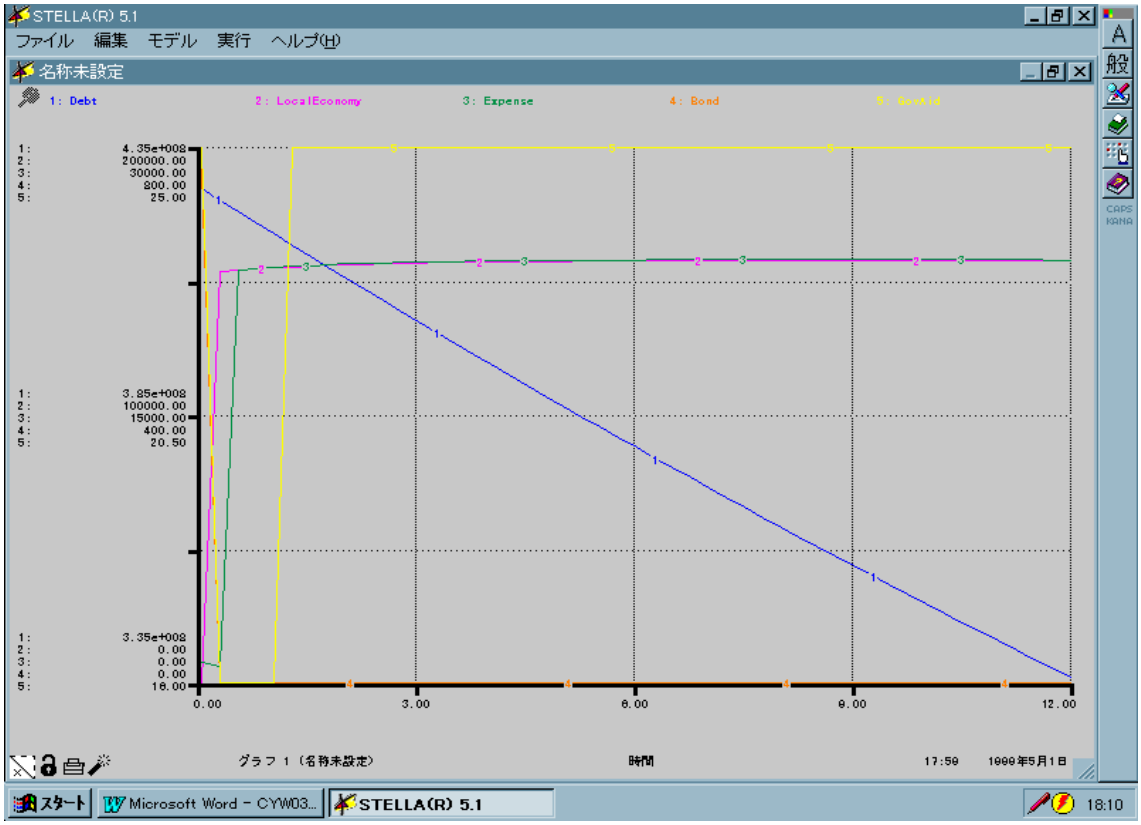
fig 1. Local Government Model



On expenditure side, project expenditures are main consumption items. Presently, local

government invests big money into public construction for expecting to make leverage of local economy. Also local government invests on projects of industry development, agriculture development, construction of waste material facilities and others. However, it is criticized as ineffectiveness and lack of grand strategic planning. (3).

fig 2. Base Simulation

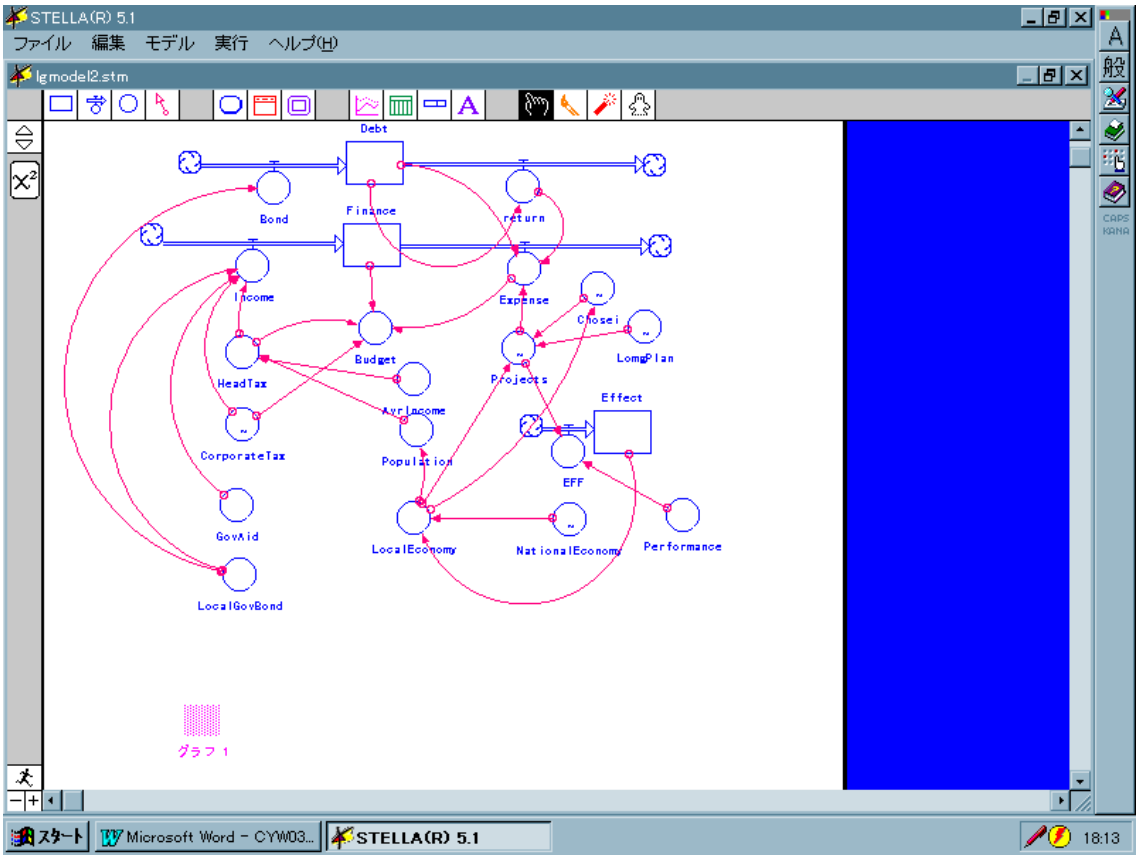


4. Scenario

Based on the model, we try to find the future perspective on local government in two scenarios focus on planning ability (3). Scenario one is that planning ability of local government is keep present level and the government reform plan was conducted as scheduled. It means the financial aids from the central government would reduce. Second scenario is, planning ability of local government improved rapidly and make some leverage for accelerating local development even the central government aids drops. We hope PFI scheme could be one of in such leverage to improve the local government situation.

For both scenarios, the model changed as shown fig. 3. Connection between projects and the aid from central government are disappearing. Also connection between budget and Local Government Bond is disappear.

fig 3. new model



5. Simulation

As our simulation results, local government needs to change the wheel of the vicious circle that local economy recession connected to depopulation and decrease the income of local government. And this is highly depends on local government planning ability. Even though national economy strong affect to local government, improve the planing ability is key success factor for future local government reform. (4)

Fig. 4: low planning ability

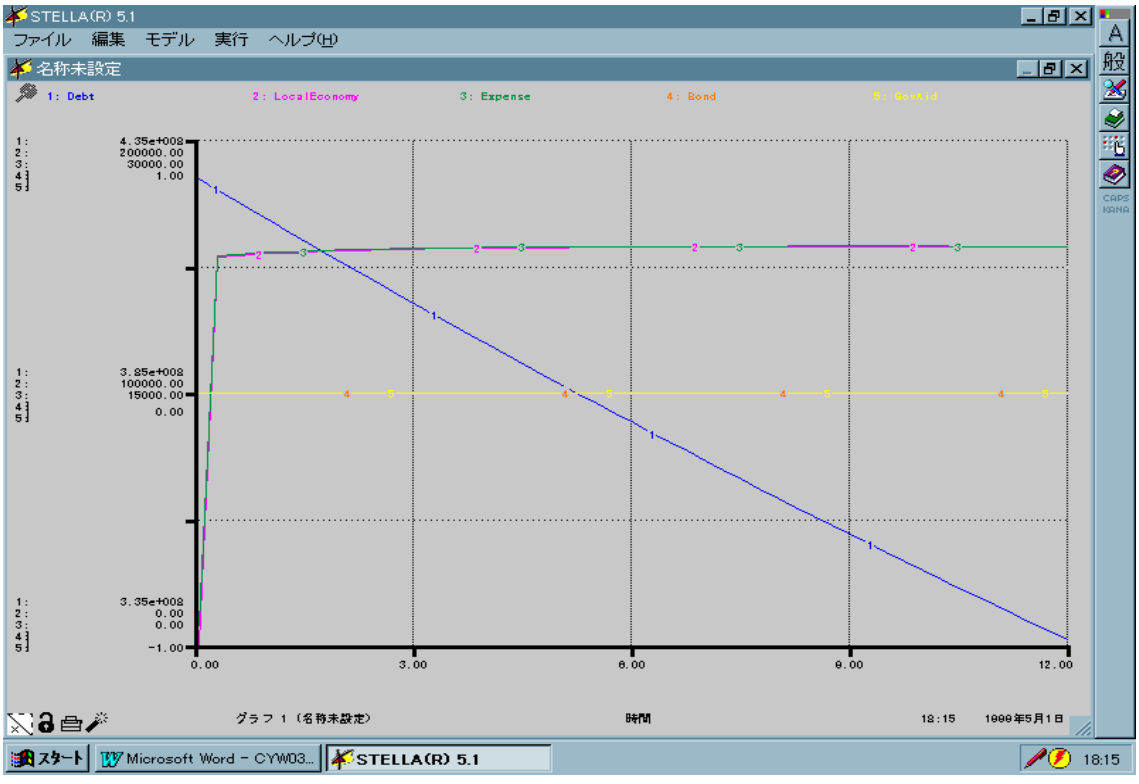
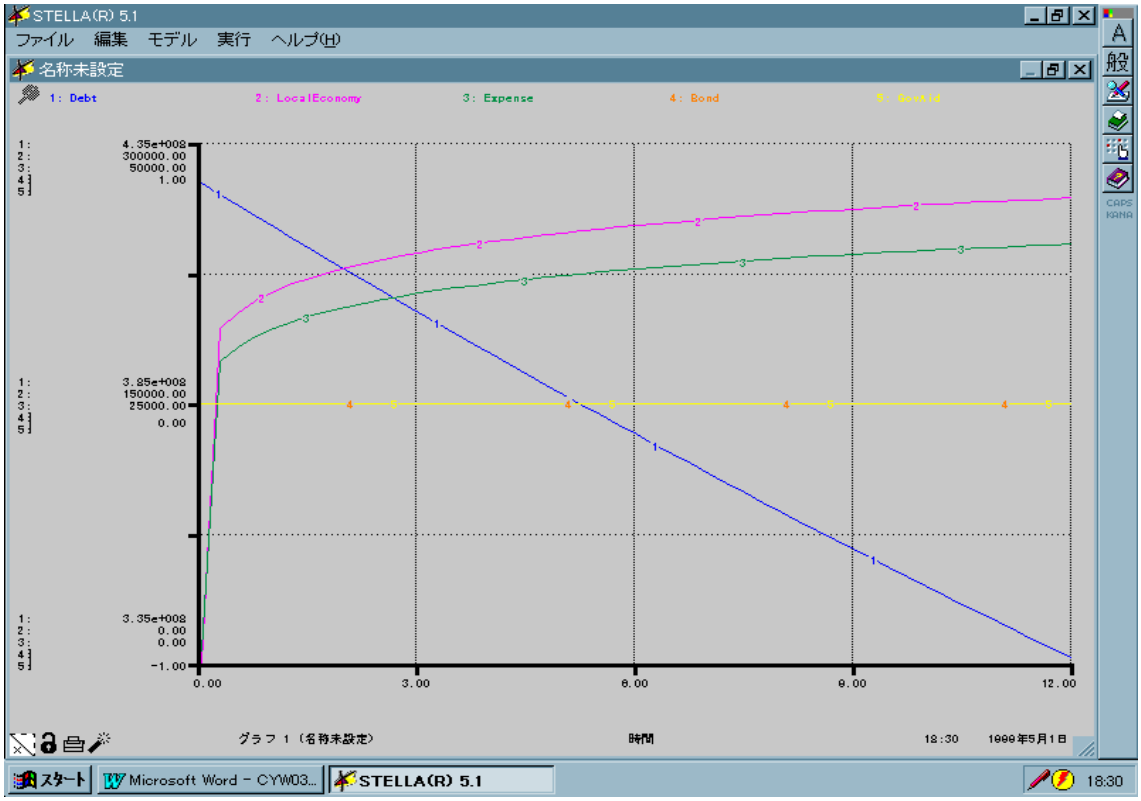


fig. 5: improve the planning ability



We hope that modeling and simulation approach of system dynamics use much widely and easily for local government people to assist their planning especially development of grand strategy. SD software is progressed rapidly from these old days of mainframe and DYNAMO world. There is lots of user friendly SD software such as Powersim, Stella, I-Think, Vensim. Also, focus on specific issues and make small model is key success factor for simulation and planning assistance. We recommend that do not hesitate to change the model structure for simulation scenario. Lastly, even if the developed models are rather small and limited, it could be a universal tool for discussion with other people if the data is based on SNA.

Notes:

1) Nagakiyo Takahashi and Nagashige Shinozaki “Control and Disclosure of Local Government Information”, Jichitai No Keiei To Koritsu, I: Keiei to Gyouzaisei Unei (Management and Efficiency of Local Government, I: Management and Operation, ed. Makoto Takahahi), Gakuyoshobo, Tokyo 1982, p131-147

(2) Yoshitugu Kanamoto, Urban Economy (Toshi Keizaigaku), Toyo Keizai Shinposha, Toyo 1997, p226-227.

(3) Local government has a lot of issues. We only focus on the planning ability as performance this time. Other issues such as aged people healthcare, pension and health insurance, heavy debt, solid

waste are also important and hope to discuss someday.

(4) Akira Shimazu ed. "Financial Statistics of Japanese Local Government (Zusetsu Chiho Zaisei) 1998 edition, Toyo keizai, Tokyo 1998